

WHAT IS CLAIMED IS:

1. A cable management arm for securing a cable between a moveable portion of a drawer and a stationary portion of a server system rack, comprising:

a single member having a main body portion which defines a longitudinal axis;

5 a plurality of oppositely disposed grooves formed into opposite sides of said main body portion, said grooves extending transverse to said longitudinal axis and aligned on said opposite sides of said main body portion to define a plurality of hinge regions;

10 said hinge regions being spaced apart along said longitudinal axis to define at least two linkages of said single member, adjacent ones of said linkages being pivotally connected by at least a respective one of said hinge regions, and said plurality of linkages together having first and second ends, wherein said first end is fastened to the stationary portion of the server system rack at a first fixed position relative to the rack and said second end is fastened to the moveable portion of the drawer at a second fixed position relative to the moveable portion of the drawer;

15 said linkages together extending from said first fixed position to second fixed position as the moveable portion of the drawer is moved relative to the rack; and

20 cable retention tabs integrally formed with said single member, said cable retention tabs having first portions and second portions, said first portions extending from said main body portion of said single member and said second portions extending across said main body portion of said single member, spaced apart from said main body portion, for securing the first set to said single member.

2. The cable management arm of Claim 1, wherein respective ones of said oppositely disposed grooves are symmetrical about respective central planes of respective ones of said hinge regions of said single member.

3. The cable management arm of Claim 2, wherein respective ones of said grooves are disposed in a back-to-back alignment.

4. The cable management arm of Claim 3, wherein at least a first part of said grooves have generally arcuate shapes, and at least a second portion of said grooves have generally rectangular shapes.

5. The cable management arm of Claim 4, wherein outward edges of said grooves are chamfered.

6. The cable management arm of Claim 1, wherein said cable retention tabs alternately extend from opposite ones of edges of said single member.

7. The cable management arm of Claim 1, wherein said second portions of said cable retention tabs extend substantially parallel to said main body portion of said single member, in fixed relation to said main body portion.

8. The cable management arm of Claim 7, wherein said cable retention tabs are L-shaped, with said first portions extending substantially perpendicular to said main body portion of said single member, and said second portions extending substantially parallel to said main body portion.

9. The cable management arm of Claim 1, further comprising apertures in said main body portion of said single member disposed adjacent to respective ones of said cable retention tabs.

10. The cable management arm of Claim 1, wherein said single member has a cross-section of a channel shape which comprises said main body portion, and opposite edges which are perpendicular to said main body portion to define flanges.

11. The cable management arm of Claim 5, wherein said cable retention tabs are L-shaped, with said first portions extending substantially perpendicular to a plane of said main body portion of said single member, and said second portions extending substantially parallel to said plane of said main body portion, in fixed relation to said main body portion.

12. The cable management arm of Claim 11, further comprising apertures in said main body portion of said single member disposed adjacent to respective ones of said cable retention tabs.

13. The cable management arm of Claim 12, wherein said single member has a cross-section of a channel shape which comprises said main body portion, and opposite edges which define flanges that are perpendicular to said main body portion.

14. A cable management arm for securing a cable between a moveable portion of a drawer and a stationary portion of a server system rack, comprising:

a single member of molded plastic having a main body portion an elongate shape which defines a longitudinal axis;

5 a plurality of oppositely disposed grooves formed into opposite sides of said main body portion of said single member, said grooves extending transverse to said longitudinal axis and aligned on said opposite sides of said main body portion to define a plurality of hinge regions;

10 said hinge regions of said single member being spaced apart along said longitudinal axis to define at least two linkages of said single member, adjacent ones of said linkages being pivotally connected by respective ones of said hinge regions, and said linkages together having a first end and a second end, wherein said first end is fastened to the stationary portion of the server system rack at a first fixed position relative to the rack and said second end is fastened to the movable portion of the drawer at a second fixed position relative to the moveable portion; and

15 cable retention tabs integrally molded with said single member of molded plastic, said cable retention tabs having first portions and second portions, said first portions extending from said main body portion of said single member of molded plastic and said second portions extending across said main body portion of said single member of molded plastic, spaced apart in fixed relation from said main body portion, for securing said first cable set to said flexible cable management arm.

15. The cable management arm of Claim 14, wherein respective ones of said oppositely disposed grooves are disposed in a back-to-back alignment, and are symmetrical about a central plane of respective ones of said hinge regions of said single member of molded plastic.

16. The cable management arm of Claim 15, wherein at least a first part of said grooves have generally arcuate shapes and at least a second portion of said

grooves have generally rectangular shapes.

17. The cable management arm of Claim 16, wherein outward edges of said grooves are chamfered.

18. The cable management arm of Claim 15, wherein said cable retention tabs alternately extend from opposite ones of said edges of said single member of molded plastic.

19. The cable management arm of Claim 18, wherein said second portions of said cable retention tabs extend parallel to said main body portion of said single member of molded plastic.

20. The cable management arm of Claim 19, wherein said cable retention tabs are L-shaped, with said first portions extending perpendicular to said main body portion of said single member of molded plastic, and said second portions extending parallel to said main body portion.

21. The cable management arm of Claim 20, further comprising apertures in said main body portion of said single member of molded plastic disposed adjacent to respective ones of said cable retention tabs.

22. The cable management arm of Claim 21, wherein said single member of molded plastic has a cross-section of a channel shape which comprises a planar, main body portion and opposite edges which define flanges that are perpendicular to said planar, main body portion.

23. A drawer for a server system rack, comprising in combination:
a tray;

telescoping slide assemblies having inner rails and outer rails, said
outer rails mounted to the server system rack and said inner rails mounted to said
5 tray to movably secure said tray to the server system rack, such that said tray is
movable from an inward position, substantially disposed within the server system
rack, to an outward position, extending outward of the server system rack;

a first cable set which connects from said tray to a stationary portion
of the server system rack;

10 a single member of molded plastic defining a flexible cable
management arm which is secured between said tray and the server system rack, said
single member of molded plastic having oppositely disposed grooves formed into
opposite sides of said single member of molded plastic, with said grooves extending
15 transverse to a longitudinal axis of said single member of molded plastic to define
hinge regions, such that said hinge regions define a plurality of linkages in said
single member of molded plastic, said plurality of linkages being pivotally connected
by said hinge regions and said plurality of linkages together having a first end and a
second end, wherein said first end is pivotally fastened to the server system rack at a
20 first fixed position relative to the rack and said second end is pivotally fastened to
said tray at a second fixed position relative to said tray, and wherein said plurality of
linkages extend from said first fixed position to second fixed position as said tray is
moved between said inward and outward positions relative to the rack; and

cable retention members integrally molded as part of said single
member of molded plastic defining said flexible cable management arm, said cable
25 retention member being defined by L-shaped tabs for securing said first cable set to
said flexible cable management arm.

24. The drawer according to Claim 23, further comprising:
an input device and a display mounted to said tray, with said display

monitor pivotally mounted to said tray for angularly moving from a downward, storage position into an upright, viewing position;

5 stationary mounts secured in fixed relation to said outer rails of said telescoping slide assemblies, rearward of said tray;

 an electronic switch mounted to the stationary mounts, said electronic switch selectively operable to connect said keyboard and said flat panel display to selected ones of a plurality of servers;

10 said first cable set connecting the electronic switch to the input device and the flat panel display;

 a plurality of cable sets connecting the plurality of servers to the electronic switch; and

15 a toolless fastener mounted to at least one end of each of said outer rails, said toolless fastener having a latch member with a forwardly extending latch portion which is selectively moveable in a lineal direction to selectively engage within a rack frame of the server system rack.

25. The drawer according to Claim 24, wherein said toolless fastener comprises:

5 a bracket having an elongated body, a first tab and a second tab which extend transverse to said elongated body, with said first tab being spaced apart from said second tab, said first tab having a slot formed into a side thereof and said second tab being disposed on a terminal end of said elongated body, said second tab having an aperture which is aligned in fixed relation with said slot formed in said first tab;

10 a latch member having a guide portion which extends adjacent to and slidably engages a planar portion of said elongated body of said bracket, and said latch member further having flange which extends transverse to said guide portion, a post which extends from said flange generally parallel to said guide portion, and a latch tab which extends parallel to said guide portion and outward of said flange, transverse to said flange;

15 said latch member being slidably engaged with said bracket, with said guide portion of said latch member extending adjacent to said planar portion of said elongated body of said bracket, said guide portion of said latch member having an aperture slidably receiving said first tab of said bracket, and said latch tab extending through said aperture in said second tab, and said post extending from said flange of said latch member into said slot in said first tab of said bracket;

20 a bias member extending between said first tab of said bracket and
said flange of said latch member, such that said latch member is urged toward said
second member with said latch tab protruding outward of said aperture of said latch
tab; and

two protuberant members extending from said second tab member of
25 said bracket, in a direction in which said latch tab protrudes from within said
aperture of said latch tab, wherein said two protuberant members and said latch tab
are lineally aligned to extend in parallel, transverse from a line along which said two
protuberant members and said latch tab are lineally aligned, for fitting with regularly
spaced apertures of a rack frame of the server system rack.

26. The drawer according to Claim 24, wherein said latch member of said toolless fastener comprises a rearward portion and a forward portion which are slidably engaged together, with said rearward portion fixedly secured to one of said outer rails, said forward portion slidably moveable relative to said rearward portion of said latch member, and said forward portion being formed to define said forwardly extending latch portion which is selectively moveable in lineal directions for selectively engaging a rack frame of the server system rack;

a bias spring which extends between said rearward portion and said forward portion of said latch member to urge said forward portion into a forwardly disposed position relative to said rearward portion;

said rearward portion and said forward portion each having generally cylindrical shapes, wherein said forward portion is formed to define a tapered nose

section which tapers radially inward at a taper of approximately twenty degrees, from
a larger size to a smaller size, in a direction which extends from said rearward
15 portion toward the rack frame of the server system rack; and
said forward and said rearward portions having interior chambers
which are defined for housing said bias spring, said rearward portion having an outer
periphery which, on a forward section thereof, is enlarged to define a head, and said
forward portion having a rearward end section which is sized for receiving said head
20 and being crimped around said head to slidably secure said forward portion to said
rearward portion.